Before the
Federal Communications Commission
Washington, D.C. 20554

Federal-State Joint Board on Universal Service	)	**CC Docket No. 96-45**

Comments of Citizens for a Sound Economy Foundation

Citizens for a Sound Economy Foundation (CSE Foundation) hereby offers these comments in the above-referenced proceeding and in response to the Commission's Public Notice seeking comments on the Federal-State Joint Board's recommendation. Founded in 1984, CSE Foundation is a nonprofit research and educational organization with 250,000 members and supporters in every state in the country. We have been active in a broad range of telecommunications policy concerns since 1988, addressing such issues as universal service, price regulation, and use of the electromagnetic spectrum.

The Joint Board's recommendations for implementing the universal service requirements of the Telecommunications Act of 1996 reflect considerable effort. As the Commission is charged with implementing these recommendations, it is important that the principles and policies outlined by the Joint Board receive critical evaluation.

Citizens for a Sound Economy Foundation believes that the Joint Board was correct to recognize both the importance of competitive neutrality in taxing providers and promoting technologies, as well as the importance of competitive bidding in determining the level of universal service support. However, we also note that the Board's recommendations as a whole likely will result in a large universal service program that will require a high tax burden on providers -- and ultimately consumers. We further note that smaller subsidies and the use of competitive bidding in high-cost markets could help to minimize the total cost of universal service at the same time that it promotes competition within high-cost markets.

Accordingly, we urge the Commission to continue its consideration of methods to promote competitive neutrality. We also urge reconsideration of the use of competitive bidding as a means to evaluate high-cost markets, and we recommend that the size and scope of educational subsidies be further limited.

I. Principles

CSE Foundation notes that the Joint Board[1] recommends against a substantial expansion of the universal principles identified in section 254(b) of the Telecommunications Act of 1996.[2] As this largely is consistent with the position we took in our initial comments,[3] we concur with this recommendation. We also note that the Joint Board recommended the additional principle that "(u)niversal service support mechanisms and rules should be applied in a competitively neutral manner."[4] The Board argues that this principle could help to promote the requirement in section 254(e) that universal service support be explicit. It further believes that this principle could help maintain a policy that is "technology neutral" by "allowing the marketplace to direct the development and growth of technology and avoiding endorsement of potentially obsolete services."[5]

While hesitant to endorse additional principles that might expand universal service and raise the costs of such a program for ratepayers and taxpayers, CSE Foundation believes that this additional principle, as presented in the Recommended Decision, appears to serve the opposite purpose. That is, this principle appears to help limit, tailor and focus universal

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[1] "Recommended Decision of the Federal-State Joint Board on Universal Service," ("Recommended Decision"), CC Docket No. 96-45, November 8, 1996.

[2] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56.

[3] "In the Matter of Federal-State Joint Board on Universal Service," Notice of Proposed Rulemaking ("NPRM"), CC Docket No. 96-45, Comments of Citizens for a Sound Economy Foundation, April 9, 1996.

[4] Recommended Decision, Para. 23.

[5] Ibid.

service subsidies, and to this extent we support such a principle.

CSE Foundation also agrees with the Joint Board's recommendation not to expand the universal service principles to include additional services. In particular, we note that the Board recommended against expanding subsidies to schools and libraries to include other "community-oriented organizations"[6] and that it rejected the suggestion that the definition of universal service should "be altered to include access to interactive services as a principle."[7] We concur with these recommendations.

In addition, we especially agree with the Joint Board's statement that "an overly broad definition of universal service might have the unintended effect of creating a barrier to entry for some carriers because...carriers must provide each of the core services in order to be eligible for universal service support."[8] We find this argument to be consistent with the arguments we make in our comments and reply comments as well as the new points we raise *infra*. Universal service subsidies, to the extent they are mandated by the 1996 Act, should be small, the least-distortive as possible, and paid for in a competitively neutral manner.

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[6] Recommended Decision, Para. 26. This argument was made by the Joint Board in response to a request by LA RAZA that universal service subsidies support such organizations.

[7] Recommended Decision, Para. 27. This argument was made by the Joint Board in response to a request by the Bar of New York for universal service support for interactive services.

[8] Recommended Decision, Para. 70.

II. Support for High-Cost Areas

Citizens for a Sound Economy Foundation believes that universal service support for high-cost areas is one of the most important issues addressed by the Joint Board, both because of the number of subscribers affected and because of the potential size of this subsidy. In fact, as noted in comments filed by us and others, the total costs associated with subsidization of rural and high-cost areas is likely to be at least $5 billion annually.[9] This estimate for rural and high-cost area support substantially exceeds the estimates for the proposed support to low-income subscribers and educational institutions. The subsidy therefore deserves significant attention by both the Commission and the Joint Board.

The Board's discussion and evaluation of the many comments filed before it on this issue demonstrate a large amount of consideration that thus far has been given to different approaches to universal service. Significantly, the Board does not recommend that embedded costs be employed to determine the level of universal service support in non-rural high-cost areas. This recommendation is based on the Board's opinion that the use of such costs does not promote efficient behavior on the part of incumbent local exchange providers.

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[9] Federal-State Joint Board on Universal Service, Notice of Proposed Rulemaking and Order Establishing Joint Board, CC Dkt. No. 96-45 (March 8, 1996), Comments of Citizens for a Sound Economy Foundation. See also, Telecommunications Industries Analysis Project, "What is the Price of Universal Service? Impact of Deaveraging Nationwide Urban/Rural Rates," TIAP, Cambridge, MA (1995), and Hatfield Associates, "The Cost of Basic Universal Service," Hatfield Associates, Denver, CO, prepared for MCI Corporation (July 1994).

CSE Foundation concurs with this opinion, but adds that the same logic can and should apply to all carriers serving subsidized high-cost areas. That is, the problems inherent in any subsidy mechanism based on embedded costs are not particular to non-rural areas only but are in fact problems that inevitably accompany any "cost-based" regulatory structure. Rural high-cost areas will experience these problems as well, perhaps even more so. The Commission should, therefore, reconsider the Joint Board's recommendation to prohibit subsidies based on embedded costs only in non-rural areas and should instead extend this prohibition to all areas.

Whereas the Joint Board rightly disapproves of a universal support mechanism for high-cost areas based on embedded costs, the support mechanism it recommends also fails to promote the competitive markets that will best serve consumers. The Board endorses the use of a proxy model to determine the level of universal service support for high-cost areas. The Board recommends that a proxy model based on forward-looking costs be used to calculate the subsidy to these areas because "(t)hose costs best approximate the costs that would be incurred by an efficient provider entering that market."[10]

While the Board supports the use of some type of proxy model to calculate subsidies for high-cost areas, it also expresses the belief that "support should be based on the cost of an efficient carrier and should not be used to offset the costs of inefficient provision of

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[10] Recommended Decision, Para. 270.

service..."[11] CSE Foundation concurs with the Board's recommendation that inefficient costs not be subsidized for any carrier, which corresponds to our objection to the use of embedded costs in estimating this support. We disagree, however, with the recommendation to employ forward-looking costs to calculate high-cost area subsidies.

Proxy models, which are based on forward-looking costs, certainly reflect the use of the most efficient technology, as the Board suggests. However, while such models are useful to show what it *should* cost to serve a particular market with specific geographic, subscriber density, and other characteristics, they do not reveal what actual and potential providers will demand in order to serve such a market. It is the cost estimates of these actual and potential providers -- and not the estimates of any particular model -- that offer us the best estimate of the true cost of providing service in these markets.

Because the best estimates of the true cost of serving high-cost areas comes from the actual providers and their potential competitors, CSE Foundation believes that any universal service subsidy should be calculated based on these estimates. Perhaps the best way to incorporate these estimates is through the use of competitive bidding.

Citizens for a Sound Economy Foundation commends the Joint Board for the consideration it has given competitive bidding, especially its recognition that "a properly structured competitive bidding system could have significant advantages over other

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[11] Ibid.

mechanisms used to determine the level of universal service support."[12] We agree with the Board's observations that a competitive bidding model would effectively reduce the role of regulators at the same time that it addresses the effects of both new market opportunities and new regulatory burdens or other costs. Most importantly, the Joint Board rightly recognizes that the "greatest advantage of competitive bidding is that it holds the promise of using a market-based approach to establishing the level of universal service support for any given area."[13] Market-based mechanisms are important because they can reveal the true cost estimates of actual or potential providers whose futures depend on their ability to offer competitive and profitable service.

However, despite its regard for the theoretical model of competitive bidding, the Joint Board concludes that "the information contained in the record does not support adoption of any particular bidding proposal at this time."[14] The Board specifically notes that GTE was the only commenter with a detailed proposal offered in this proceeding. It also points out that this proposal by GTE was modified in the company's response to questions raised in the Common Carrier Bureau's Public Notice, thus eliminating the opportunity for comments by additional parties.[15] We note, however, that the Board did not raise specific objections to the potential effectiveness of the GTE model, choosing instead to pose important but more

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[12] "In the Matter of Federal-State Joint Board on Universal Service," CC Docket No. 96-45, Recommended Decision, November 7, 1996, Para. 341.

[13] Recommended Decision, Para. 342.

[14] Recommended Decision, Para. 341.

[15] Recommended Decision, Para. 349.

general questions as to its structure and implementation.

Citizens for a Sound Economy Foundation believes that the proposal by GTE offers a useful perspective from which to approach competitive bidding, and we urge the Commission to further evaluate this proposal. We believe that the structure and implementation issues that will accompany any competitive bidding plan can be resolved and that it is in the best interests of consumers for the Commission to address these issues.

We further note that the GTE proposal as modified attempts to address some of the potential problems in a competitive bidding model. GTE's response to the Common Carrier Bureau's Public Notice included a statement by Paul Milgrom of Stanford University that addresses the issue of simultaneous, competitive bidding for a scenario in which many markets are combined.[16] Such a combinatorial bidding arrangement likely would be necessary for determining the subsidy in high-cost markets, especially if the subsidy was for a large number of relatively small and discrete territories that could be served in conjunction with adjacent markets. A properly structured combinatorial bidding arrangement would incorporate the demand and cost synergies associated with serving these adjacent markets.

Professor Milgrom argues that combinatorial bidding involving many markets may produce an inordinate amount of complexity, and such complexity likely would make competitive bidding infeasible. Milgrom recommends that this potential complexity be

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[16] NPRM, GTE Further Comments, Attachment 1, August 2, 1996.

addressed through specific restrictions on the bidding mechanism, though he recognizes that a potential loss of efficiency may result from such restrictions.

We also point out that other models are in development that potentially could address the complexity in combinatorial bidding. For example, Professors Frank Kelly and Richard Steinberg of Cambridge University argue that a combinatorial bidding mechanism can be designed to reveal the form and size of the potential synergies associated with serving high-cost markets.[17] Such research may make many of the objections to competitive bidding obsolete.

Citizens for a Sound Economy Foundation believes that the proposed models for bidding on high-cost area subsidies -- including the work by Milgrom as well as Kelly and Steinberg -- deserve further attention by the Commission. Furthermore, in an attempt to contribute to this discussion, we have attached as an appendix our most recent paper on universal service support. This paper responds to some of the most significant objections to competitive bidding.

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[17] See "Distributed Computation by Auction," Kelly, Frank P. and Richard Steinberg, Working Paper, University of Cambridge, December 1996. The authors describe an auction procedure -- based on, and generalizing the auction structure used for, the PCS auctions -- that allows every possible combinatorial bid or, alternatively, every possible combinatorial bid of a specified type as specified by the auction authority. The inherent computational complexity of combinatorial bidding of course cannot be eliminated; however, Kelly and Steinberg's auction procedure is computationally simple for the auction authority and thus is very efficient to run. The computational burden of evaluating synergies rests with the bidders claiming those synergies, while the auctioneer simply verifies that the bid is valid. There is, in addition, very little computational burden for small players interested in bidding on only a few markets. If no synergies are claimed, then the auction reduces to the auction of the type utilized for the PCS licenses.

Most importantly, we point out that -- restricted or not -- a competitive bidding arrangement is likely to be more efficient than many alternatives, including the subsidy mechanisms currently employed.

Finally, we note that the Joint Board's discussion of proxy models included a recommendation that the Commission conduct a series of workshops for federal and state regulators as well as industry experts. These workshops would be designed to "select or create a proxy model that then could be used in calculating universal service support."[18] In contrast to this recommendation for a series of workshops on proxy models, CSE Foundation points out that the recommendation for competitive bidding is simply that "the Commission continue to investigate how to structure a fair and effective competitive bidding system."[19] Given that the Joint Board offers no substantial criticism of competitive bidding and agrees with the proponents of this method that it should be further explored, the lack of support for more detailed investigation is unjustified. We urge the Commission to give at least as much attention to universal service support methods based on competitive bidding as it will give to methods based on proxy models, to include workshops and other fora.

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[18] Recommended Decision, Para. 281.

[19] Recommended Decision, Para. 349.

III. Support for Educational Institutions

CSE Foundation believes that the universal service policies and principles recommended by the Joint Board regarding support to schools and libraries outline a new subsidy arrangement that is both expensive in terms of the burdens it will impose on ratepayers and expansive in terms of the federal involvement it will require for educational institutions. To its credit, the Board does not recommend that the Commission mandate particular technologies for schools. Rather, it urges flexibility among telecommunications services to "encourage schools and libraries to use both the most efficient services and the most efficient technologies, including wireless and other emerging media."[20]

CSE Foundation concurs with the Joint Board's conclusion that "all technologies have their advantages and disadvantages and...it would be best to permit individual schools and libraries to evaluate those relative costs and benefits with respect to their individual needs and circumstances."[21] We would add that the true costs and benefits of particular technologies are most readily apparent when schools and libraries bear full responsibility for their implementation. To the extent federal authorities and federal funds must be involved, we recommend limiting such involvement. For this reason, we support the use of a cap on the amount of funds distributed under this program. We believe, however, that the

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[20] Recommended Decision, Para. 461.

[21] Ibid.

recommended cap of $2.25 billion per year[22] is too high and should be lowered.

We are particularly concerned with the Joint Board's generosity towards those schools and libraries that may not be in need of assistance. The instant recommendation suggests an appropriate discount would be based on need and follow a sliding scale of 20 to 90 percent.[23] Basing this range of support may be preferable to granting a 90 percent discount to all educational institutions, but such an observation is hardly reassuring given the amount of funds that will be transferred. More importantly, even schools serving the wealthy will receive some subsidy, despite the fact that these schools almost certainly would not forego advanced technology should such subsidies not be available. We find no justification for such a transfer. Instead, we urge the Commission -- to the extent it interprets the 1996 Act to mandate federal support for education -- to require support only for those schools and libraries most in need.

CSE Foundation also notes that the Joint Board recommends that schools and libraries be required to receive competitive bids for all services that will be eligible for discounts.[24] The requirements for seeking competitive bids would follow the process of issuing requests for proposals (RFPs). The Board views the use of competitive bids as one of various ways in which schools and libraries may succeed in receiving lower prices for advanced services,

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[22] Recommended Decision, Para. 440.

[23] Ibid.

[24] Recommended Decision, Para. 539.

and it notes that aggregating demand and other market-based activities also may help produce this result.[25]

CSE Foundation believes that competitive bidding and aggregating the demand of various users are important and useful methods for helping to keep the costs of providing technology in the classroom as inexpensive as possible. Indeed, we are encouraged that the Joint Board recommends a market-based solution to this procurement problem. However, we add that market-based mechanisms such as competitive bidding currently exist at most local school districts and libraries. The Joint Board's recommendation acknowledges this practice by most local authorities.[26] While we acknowledge and respect the Joint Board's concern for the cost of educational subsidies -- a concern we share because of its effects on ratepayers -- we also are concerned about the imposition of potentially burdensome federal procurement requirements or other mandates on local governments.

In short, the Joint Board's recommendations for universal service subsidies to schools and libraries are too expensive and too expansive. Promoting technology in these institutions should not necessitate giving federal money to every school and library regardless of need. Additional rules such as requirements for competitive bidding appear to be both unnecessary and redundant with local rules. To the extent federal subsidies to these institutions are required by the 1996 Act, the support should be small and tailored to those most in need.

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[25] Recommended Decision, Para. 537.

[26] Recommended Decision, Para. 549.

IV. Access Charge Reform

With regard to access charges and the recovery of subscriber loop costs, CSE Foundation believes that the Joint Board's recommendations on this issue may serve as an important first step toward making more explicit the subsidy mechanism contained within these regulated prices. In particular, we are encouraged by the following observation by the Joint Board: "(W)e conclude that the current usage-sensitive CCL charge structure is economically inefficient and urge the Commission to change the current CCL rate structure so that LECs are no longer required to recover the NTS cost of the loop from IXCs on a traffic-sensitive basis."[27] Based on the argument made both here and in our comments that access charges create an implicit subsidy, we concur with the Board's position.

We are concerned, however, that the argument against traffic-sensitive charges for non-traffic-sensitive (NTS) costs may be taken as a recommendation against specific fees being charged by the local exchange provider to those who use the local loop. In particular, we are concerned about the potential effects of a decrease in the Subscriber Line Charge (SLC) -- which the Joint Board recommended -- absent other remedies to account for the cost of the local loop.[28]

To its credit, the Joint Board "recognizes that the Subscriber Line Charge represents

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[27] Recommended Decision, Para. 754.

[28] Recommended Decision, Para. 772.

a critical element of a complex, interdependent mechanism for the recovery of loop costs allocated to the interstate jurisdiction."[29] The instant recommendation offers a potential solution to this pricing problem that would address non-traffic-sensitive fixed costs with non-traffic-sensitive fixed charges. Specifically, the Joint Board observes that "(o)ne promising alternative that would send the proper market signals to potential users and carriers would involve permitting ILECs to recover CCL costs from IXCs through a flat, per-line charge."[30] We encourage the Commission to further explore methods in which a pricing mechanism could incorporate such an alignment of fixed costs with fixed charges.

V. Conclusion

The recommendation by the Federal-State Joint Board represents an important step in establishing the principles and policies necessary to implement the requirements of the Telecommunications Act of 1996. Unfortunately, the instant recommendations are overly expansive and will be overly expensive. For educational institutions, the level of federal involvement and subsidization is excessive and unnecessary. For high-cost areas, more emphasis should be placed on the use of market-based solutions such as competitive bidding for the receipt of subsidies.

Finally, we should not forget the importance of always considering the unintended

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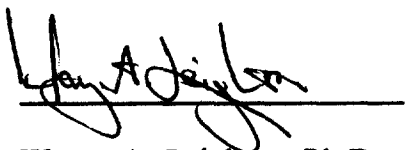
[29] Recommended Decision, Para. 770.

[30] Recommended Decision, Para. 776.

consequences of any regulatory actions. No matter how important they may seem for large social projects, subsidies ultimately must be paid for, either by taxpayers or by ratepayers. These ratepayers and taxpayers will include the wealthy, the middle class, and very often the poor, and they will be a burden on all but the wealthy. Such burdens are a real but seldom-recognized consequence of telecommunications subsidies. The Joint Board should be mindful of such burdens while attempting to implement the requirements of the Telecommunications Act of 1996.



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APPENDIX

What to Do About Universal Service Subsidies: Support for High-Cost Areas

By Wayne A. Leighton
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CSE

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What to Do About Universal Service Subsidies: Support for High-Cost Areas

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As required by the Telecommunications Act of 1996, a joint board of federal and state regulators is currently looking at ways to reform the current methods of providing "universal service" telecom subsidies for rural, insular and high-cost areas. Various methods have been discussed, but the best way may be to allow the marketplace -- through competitive bidding -- to determine the size and scope of any subsidies. Appropriately designed auctions may serve as an effective means to minimize the costs of service in these areas, while providing equal or greater quality of service. In addition, any subsidy plan should not discriminate among providers and should be as explicit as possible.

Support to ensure universal service to rural, insular, and high-cost areas is one of the most significant -- and potentially most expensive -- sections of the Telecommunications Act of 1996. For those concerned about the size of "big government" and an increasingly regulatory Federal Communications Commission (FCC), there is much to dislike in this part of the Act. In particular, the 1996 Act codifies support for universal service that may result in massive new subsidies, along with potential increases in current subsidies. The Federal-State Joint Board and the FCC are granted considerable authority under the Act to significantly expand the current subsidy arrangement. Policymakers should be mindful, however, that a more limited approach could be taken, with more authority over universal service issues relegated to state-level regulators.

Support for rural and high-cost areas is a very important matter to subscribers in rural areas, their telecommunications providers, and their representatives in Congress. The 1996 Act states:

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The Voice of Consumers for Free Enterprise

rural, insular and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, which are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas.[1]

While the language in the bill does not offer specifics as to how any subsidy process might work, it does imply that some support mechanism must exist for rural subscribers. Significantly, the legislation does not require such support to be based on the need of subscribers, and may thus result in subsidies to wealthy customers who reside in rural areas.[2]

Subsidy of $5 billion. Whether support goes to the wealthy or not-so-wealthy, subsidies to rural, insular and high-cost areas have the potential to become extremely expensive. This is due to the fact that telecommunications services in many rural parts of the country have considerably above-average costs for their capital infrastructure (known as non-traffic-sensitive costs). Over 400 small- and medium-sized local exchange providers incur monthly fixed costs of $30 or more per subscriber.[3] At the same time, the average charge for basic service in the country today is $18.50,[4] and many rural and high-cost customers actually pay less than this amount.[5] One estimate of the underpayment for local service by rural customers puts this subsidy at about $5 billion per year.[6]

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Implementation of the Telecommunications Act of 1996 could easily result in a massive increase in the size of the subsidy to rural, insular and high-cost areas. If the FCC and the Joint Board interpret this legislation as a mandate to expand current subsidies, then

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[1] Telecommunications Act of 1996, Sec. 254(b).

[2] For a discussion of the cross-subsidies that result from telecommunications regulation, see Leighton, Wayne, "Telecommunications Subsidies: Reach Out and Fund Someone," Citizens for a Sound Economy Foundation Issues and Answers, Jan. 5, 1996.

[3] Federal Communications Commission, Monitoring Report, CC Docket No. 87-339, May 1995 (data from 1994).

[4] Federal Communications Commission, Statistics of Communications Common Carriers, 1993-94, Table 8.4.

[5] National Association of Regulatory Utility Commissioners, Bell Operating Companies Exchange Service Telephone Rates, Dec. 31, 1993.

[6] "What is the Price of Universal Service?: Impact of Deaveraging Nationwide Urban/Rural Rates," Telecommunications Industries Analysis Project, Cambridge, Mass., 1993.

the costs to ratepayers will be substantial. Similarly, if they continue, along with state regulators, to use outdated, inefficient means of paying for these subsidies, ratepayers will face a substantial burden.

On the other hand, if regulators allow no more than a reasonable amount of subsidy, and if they employ efficient mechanisms for determining subsidy size, then the overall burden on the ratepayer can be minimized. The approach to financing universal service subsidies to high-cost areas is, therefore, an important issue to consider in implementing the new legislation in an efficient, cost-effective manner.

Calculating Costs: The Debate Over Estimating Universal Service Subsidies

One of the more contentious issues for universal service support in high-cost areas is calculating the appropriate size of the subsidy. That is, some method must be used to determine the market value of the Carrier of Last Resort (COLR) obligation. A method must be found that will determine the cost of serving as a carrier that serves all customers within a given market who come to it for service. In those cases where the regulated price is below cost, providers will enter and remain in a high-cost market only if a subsidy exists to cover those costs not met by the price paid by the consumer.[7]

At present, three alternative methods for calculating this subsidy are being debated.[8] These include one based on the historical costs that *have been* incurred by a provider, one based on a forward-looking estimate of what costs *should be* incurred, and one based on a *competitive process* to determine what current providers estimate their costs will be in serving a particular market.

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[7] To the extent that regulated prices do not reflect the actual cost of providing a service, some distortion occurs in the market. If the regulated price lies below the cost of providing service, consumers have an artificial incentive to subscribe to or use that service. This level of consumption exceeds that which would occur in the absence of such a subsidy, and reflects consumers redirecting their spending away from other goods and services. This subsidy must also be financed, with other subscribers or taxpayers in general paying for the difference between the price offered and the actual cost of providing service. Of course, a regulated price that exceeds the cost of providing service will only persist if effective means exist to limit other carriers from providing service.

[8] These arguments parallel those found in the debate over interconnection between incumbent local exchange providers and potential competitors. However, interconnection and universal service are distinct issues, at least in terms of government mandates of the financial compensation to be paid to service providers. In the universal service debate, regulators will determine the means through which subsidies are allocated to providers for serving markets with prices set below cost. The sum of the local rate and the subsidy should approximately equal what the market would charge. In the interconnection debate, the federal and state regulators will supervise (and may ultimately determine) the price new entrants pay to incumbents for access to the local loop, including access to individual ("unbundled") elements of that loop. For a discussion of interconnection, including its implications for universal service, see "Economics of Interconnection Panel Discussion Forum," (transcript) Federal Communications Commission (May 21, 1996).

1. Universal service subsidy calculations based on historical costs

The idea that support for universal service subsidies should be based on the actual total costs incurred by the provider is one of the more common arguments in universal service debates. In theory, since average price must equal average cost in the long-run, an accurate estimate of the costs associated with service also provides a fair estimate of the price that should be paid to the provider. Such an estimate generally involves calculating the historical cost of building and maintaining the telecommunications network.

Carriers that can recoup from their ratepayers most any cost they incur are subjected to "cost-plus" regulation. Such regulation leads to inefficient investment.

This argument for support based on historical costs certainly is not without merit. Government regulators at both the federal and state levels have attempted to promote universal telephone service through a variety of regulatory devices. These include requirements that providers serve all customers requesting service in a particular area, along with arrangements to compensate the carrier for doing so. To the extent a provider has incurred specific long-run capital costs that must be repaid over a long period of time -- and which were clearly mandated as a result of regulation -- that provider may be entitled to some compensation.

Nonetheless, reliance on a system that generously compensates carriers for all costs incurred leads to inefficiencies and wastefulness. Specifically, carriers that can recoup from their ratepayers most any costs they incur are subjected to "cost-plus" regulation. Such regulation leads to inefficient investment -- also known as gold-plating -- and effectively precludes the lower price associated with more competitive markets.[9] While the goal of "cost-plus" regulation might be keeping price in line with cost, this is of little value if the costs themselves are way out of line. Simply put, a promise to match price with cost is a direct incentive to inflate cost under cost-plus regulation. For this reason, a concerted effort should be made to eliminate subsidies based on a provider's reported cost and move toward a smaller, more efficiently-applied subsidy.

2. Universal service subsidy calculations based on forward-looking costs

While a telecommunications carrier with considerable "sunk" capital investments might prefer compensation based on historical costs, alternative carriers with no such sunk investments prefer compensation based on forward-looking costs, as illustrated by such measures as Total Service Long Run Incremental Cost (TSLRIC) and the Benchmark Cost Model (BCM).

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[9] A classic discussion of the incentives for inefficient behavior under "cost-plus" regulatory arrangements appears in Leibenstein, Harvey, "X-Efficiency, Intrafirm Behavior and Growth," American Economic Review, Vol. 56 (1966), pp. 392-415.

The TSLRIC method estimates the cost of providing a particular service by using the *least-cost technology currently available*, and in so doing avoids the inefficiencies associated with estimates that rely on historical costs. One of the best-known studies using this technique is offered by Hatfield Associates, an economic consulting firm based in Boulder, Colorado.[10] The Hatfield model relies on a TSLRIC methodology to estimate the cost of providing service in different subscriber areas, which are classified based on density. The model then provides an alternative estimate of the subsidy needed to serve high-cost areas.

Similar to the TSLRIC approach is the Benchmark Cost Model (BCM), which analyzes the cost of providing service using the *most cost-effective technology for a clearly-specified set of subscribers.*[11] These are separated using Census Block Groups, which cover about 400 households. Once a set of subscribers is broken down by Census Block Group, the BCM approach estimates an appropriate cost for service based on such conditions as the terrain and population density (i.e., whether the 400 households are in mountainous or urban terrain, scattered over many square miles or along a few city blocks).

By narrowly tailoring its focus to groups of only 400 households, the BCM approach minimizes the probability of inadvertently averaging high- and low-cost customers. Such rate-averaging produces an implicit subsidy from low- to high-cost customers, since the latter would pay more were it not for the presence of overcharged low-cost customers in their rate pool. Yet as markets become more competitive, this cross-subsidy becomes more difficult to maintain. Rate-averaging also encourages new entrants to "cream-skim" low-cost customers. While cream-skimming provides these low-cost customers with service at a lower price, it simultaneously reduces the financial support for high-cost customers, raising their prices closer to actual costs.

"Ideal-type" approach. The Benchmark Cost Model is, therefore, a potentially effective mechanism for both directing the flow of a vast array of subsidy dollars and limiting cross-subsidies. The model does not, however, overcome all of the problems associated with subsidies for high-cost areas. Specifically, the Benchmark Cost Model takes an "ideal-type" approach to universal service, in which the most cost-effective technology immediately supersedes the technology currently employed. This may be an unrealistic approach to supporting high-cost areas, at least in the short-run.

More importantly, while a BCM approach focuses on the least-cost technology that may provide service to a market, this may or may not be the most relevant information. The most relevant information is always that cost which potential providers would be willing to incur in order to serve a market, not a regulator's -- or any other observer's -- estimate of what that cost *should* be.

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[10] "The Cost of Basic Universal Service," Hatfield Associates, Boulder, Colo., 1994. Prepared for MCI Communications Corporation.

[11] See "Benchmark Cost Model: A Joint Submission by MCI Communications Corporation, NYNEX Corporation, Sprint Corporation, and U S West, Inc.," 1995, CC Docket No. 80-286.

No model works exactly. In other words, no model will describe exactly what the real-world price should be, nor is it likely to reflect the continual downward pressure on price that competitive forces provide. What is considered the least-cost technology in a dozen nearly identical markets may not be feasible in the 13th market. Important factors may be excluded, or unnecessary ones included. Indeed, one of the realities of telecommunications and other markets is that, outside of market pricing, costs are very difficult to measure. What's more, these costs may vary significantly over what appear to be similar markets.

These points are easily overlooked, yet critical in understanding how markets actually function. In short, costs are largely subjective, and the best way to discover the true nature and size of these costs is through the interaction of participants in a market. Much can be learned by observing the willingness (or lack of willingness) of providers to serve in a particular market.

The most relevant information is always that cost which potential providers would be willing to incur in order to serve a market, not a regulator's -- or any other observer's -- estimate of what that cost should be.

But the question remains as to how costs can be accurately measured in an admittedly distorted marketplace. For universal service subsidies to high-cost markets, this information may perhaps be best conveyed through a process that employs competitive bidding to estimate the proper subsidy.

3. Universal service subsidy calculations based on estimates from competitive bidding

This approach represents what may be a more efficient means to address the issue of promoting universal service in high-cost areas. Under this third option, the subsidy received would be based on the allocation process that best approximates a market process. While there is no one best way to incorporate the characteristics of competitive markets within subsidized markets, to the extent that competitive *processes* may be approximated, competitive *prices* may be approximated.

Competitive bidding offers perhaps the most effective way to approximate competitive processes in allocating high-cost subsidies, and is based on an auction in which potential providers bid to serve a market at a subsidized rate. Similar to a BCM approach, subsidies would be based on a geographically small area such as a Census Block Group. The subsidy would be determined by the lowest bidder in the market (i.e., the carrier willing to serve for the smallest subsidy) with the per-subscriber subsidy equal to the total subsidy divided by the number of subscribers.

Multiple winners. More than one bidder could win a subsidy in the auction, though rules would have to be set forth to clarify which bidders would be eligible for support. While no provider would be denied the right of entry, the subsidy might be limited to those who participated in the auction and offered a sufficiently low bid. Support would be distributed according to the number of subscribers served by the provider, with the subsidy guaranteed at this level for a specified period of time, say three to five years.

An obvious advantage of competitive bidding is that it decreases the likelihood that providers will inflate their costs and makes it more likely that efficient providers will be rewarded.

An obvious advantage of this subsidy arrangement is that it decreases the likelihood that providers will inflate their costs and makes it more likely that efficient providers will be rewarded. This tendency toward efficient operations stems from the best of enforcement mechanisms: competition. As competing providers bid for a subsidy, the value of the combined return (retail price plus subsidy) should approximate the cost incurred by the most efficient provider. The end result would be service provided to high-cost areas at a lower cost to the taxpayer.

No matter what subsidy arrangement is adopted, some difficulties will nonetheless appear. This occurs because the natural operation of the market is being distorted -- subscribers with high-cost service do not pay rates that reflect the cost of serving them, low-cost subscribers pay rates that exceed their cost, and all adjust their use accordingly.

Subsidy ceiling. In response to these problems, regulators may be inclined to implement auctions in a more restricted framework, with the intention of minimizing the distortion to the market. For example, a subsidy ceiling could be established to guarantee that the support will not cost more than a certain amount.[12] A subsidy ceiling would be that level above which support would not rise, such as the current level of compensation already being paid to the incumbent provider.[13] Further discussion of alternatives and auction theories follows.

In order to maintain the benefits of competition, however, there must be freedom of entry at all times, not simply once every three or five years. For example, under an auction arrangement, new providers could enter a market at any time, providing customers with benefits such as a newer technology or superior service. Incumbent providers would not be guaranteed any customers, though they would be guaranteed a subsidy for each subscriber for

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[12] For competitive markets, such regulations are unnecessary and overly burdensome. The application used here is designed for markets in which government has intervened by establishing some sort of subsidy.

[13] For an explanation of one type of price ceiling in telecommunications markets, see Baumol, William and Greg Sidak, Toward Competition in Local Telephony, MIT Press and the American Enterprise Institute (1994). The authors recommend that a price ceiling equals stand-alone cost (i.e., what it would cost a provider to offer that service not in conjunction with any other service). This may or may not equal the cost incurred by the incumbent, but it is not likely to exceed it.

the duration of their subsidy contract.

Of course, no arrangement in which government subsidies finance part of the cost of serving a market will produce the same results as unsubsidized, competitive markets. On the other hand, it may be possible that a properly designed arrangement will produce a subsidy that, when added to the price paid by the customer, approximately equals the compensation a provider would require under competitive market conditions.

Competitive Bidding for Universal Service: Theory That Can Work in Practice

The concept of an auction for universal service subsidies raises many questions. In response, we present here a list of the most common objections, concerns, and questions, along with potential solutions to each of the problems addressed.

*** What incentive does the provider with the lowest cost have to bid low?**

This is a common concern voiced by observers of auction models in this area, and without some modification the problem of inflated bids certainly exists. One modification that substantially limits this problem is to include an incentive bonus. Under such an arrangement, the lowest bidder would receive the full value of its requested subsidy, while all other bidders would receive a smaller level of support. For example, if the winning provider put in a bid for a $30 monthly subsidy over and above what the customer pays, and if the remaining providers bid $40, $50, or higher, then the winner would receive $30, and the other providers would receive, say, $20 in support. With this arrangement, a firm that fails to produce the lowest bid is "punished" with a smaller subsidy. This, in turn, makes it more of a risk for the provider with the lowest cost to inflate its bid, since it may be undercut in the competitive process.

Another approach to encouraging low bids (and discouraging cost inflation) is to have only one auction every set period of years, with the subsidy going to only the lowest bidder (or those sufficiently close to the lowest bid). Bidders requesting a higher subsidy would receive no support. Those who inflate their bids would therefore risk being undercut by lower bidders and potentially precluded from receiving any subsidy at all. This approach -- involving a sealed-bid, single-round auction -- has been proposed by at least one participant in the universal service debate.[14]

[14] For an example of an auction model that incorporates single-round bidding, see Notice of Proposed Rulemaking, Federal-State Joint Board on Universal Service, Federal Communications Commission, CC Docket No. 96-45, comments of Paul Milgrom, Stanford University, submitted by GTE Service Corporation.